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ABSTRACT

The Test of Understanding in College Economics (TUCE) was delivered to a random sample of college students enrolled in 15 private and public institutions in Louisiana. The students took form A of the TUCE test before taking their first college course in economics and Form B of TUCE upon completing the course. Results showed that before taking a college-level course in economics, students in Louisiana are no better prepared than most of their peers in the nation. After taking the introductory college economics course, however, the study's results indicated that Louisiana's college students are ill-prepared to cope with the decisions required of citizens in a participatory, fragile, market-oriented democracy. Two possible explanations offered for the poor posttest results are that (1) since the test was not used by the professor as part of the course grade, students treated the test in a cavalier manner, and (2) the posttest did not test the content of the course itself. The names of institutions and individuals cooperating with the research study are provided in the appendices. Also included are tables describing research results. (RM)

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THE ECONOMIC LITERACY

OF

LOUISIANA COLLEGE STUDENTS

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SO 016 272

Paper presented at the Annual Meeting of the Southwestern Economics Association (Houston, TX, March 19, 1983).

The Economic Understanding
of
Louisiana College Students

To Kenneth E. Boulding, a past President of the American Economic Association and Professor of Economics with the University of Colorado, was accorded the honor and responsibility of writing the premier article for volume one, number one of The Journal of Economic Education which was published in the fall of 1969. Entitled, "Economic Education: The Stepchild Too Is Father of the Man," he noted:

> "The relationship between economics and education goes far beyond that of the relationship between education and many other subject matters, simply because the process of human learning itself has a great many characteristics of an economy. ... Today when we know so much, unless we devote the cream of our intellectual resources to the problem of economies in the transmission of knowledge, that is, to education, we may find the whole growth process grinding to a halt. This is a sufficient reason why the specialists in knowledge of all kinds should be actively interested in its transmission from one mind to another. ....
>
> In economics again, however, the case is particularly urgent and of peculiar importance. ... An accurate and workable image of the social system in general, and the economic system in particular is, however, increasingly essential to human survival. If the prevailing images of the social system are unrealistic and inaccurate, decisions which are based on them are likely to lead to disaster... a society in which important decisions are based on fantasy and folk tales may well be doomed to extinction. Especially in a democracy, knowledge, no matter how good, which is confined to a small elite stands in danger of lying idle in the decision-making process. To be effective, it must be widely disseminated."[1]

With similar convictions and experience, it was decided to appraise the economic knowledge of some of Louisiana's young citizens in order to establish at the least a benchmark, a census, of understanding of matters, terms, principles of economics at the beginning of the 'eighties, since the 'seventies had so clearly shown the need for ever more rational

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decisions about "production, distribution and the consumption of scarce economic resources." A nationwide, indeed worldwide, recession coupled with an oil-glut and falling public revenues have simply underscored the need for economics understanding by a wider portion of the state's and the nation's public. So we devised the research project reported here. In essence, the Center for Economic Education at the University of New Orleans utilized the Revised Test of Understanding in College Economics to probe the economic literacy of a statistically representative sample of Louisiana college and university students. The results and conclusions we drew from them are presented below.

The Revised Test of Understanding in College Economics

The Joint Council on Economic Education published the original Test of Understanding in College Economics in 1968 in response to a demonstrated need for a testing instrument that would allow measurement of controlled experiments in the teaching of introductory economics at the college level. The 1960's had seen a swift increase in college enrollment, and with scarce resources ever present, many experiments were made with differing techniques of instruction in economics then. In addition, the construction and use of a nationally-normed test allowed instructors of introductory courses to compare the performance of their students with that of students in other colleges and universities. The test was prepared in six, separate forms in order to allow testing of the students before and after a college course in macroeconomics, microeconomics, or the one-semester survey of economic principles both macro- and micro-. A second form of each of the three, principal tests, as nearly identical in content and objectives as was humanly possible, was devised in order to allow the comparison of students' learning after a course in college economics. There was the fear, though subsequently somewhat reduced if not completely eradicated, that the students would remember the questions from the testing at the beginning of a semester and thus distort the end-of-the-course results.

The original TUCE, Part I, Forms A and B, contained seven different content categories with the 33 questions equally distributed among the

three objectives of: a) Recognition and Understanding; b) Simple Application; and c) Complex Application. It was intended to test macroeconomic understanding. TUCE Part II was similar in construction, though with only six content categories. It emphasized microeconomics in the main, with six questions on international economics and three on comparative economic systems. In the 1970s, however, the content of the introductory course changed in many of the nation's institutions of higher learning and by the end of the decade a revision was clearly needed.

With customary thoroughness, the Joint Council proceeded, working in cooperation with the standing Committee on Economic Education of the American Economic Association. Most of the revising was the work of three: Rendig Fels of Vanderbilt University, Phillip Saunders of Indiana University, and Arthur Welsh of the Joint Council. A Special Advisory Committee also served to advise and counsel the Test Revision Committee. They were: G. L. Bach, Stanford University; Allen C. Kelley, Duke University; Paul A. Samuelson, Massachusetts Institute of Technology; and George Stigler, University of Chicago. The Revised Test of Understanding in College Economics was then distributed to thirty-six colleges and universities throughout the United States for morning in the spring 1979 term. It was published in 1981. The content categories and objectives of the revised TUCE are identified in Tables 1 through 6 in the headings. The table numbers, form and content follow those of the interpretive manual accompanying the TUCE and prepared by Phillip Saunders.[2] The rationale as well as the content and objective specifications of the TUCE are also fully presented and explained in that publication.

The Sample of Louisiana College and University Students

The Louisiana Council on Economic Education accepted and agreed to fund the research project in May. With the cooperation of the University of New Orleans, the Center for Economic Education in New Orleans began the project in the summer of 1981.

The desired sample was based on the enrollment in each of Louisiana's institutions of higher education in 1979. The number of economics students from each institution was to comprise the same percentage in

the total sample as that of their institution in the total enrollment of the state. Although the sample had to be determined in the end solely by the willingness of faculty members to cooperate, the ultimate working sample involved 15 of the state's private and public institutions and the proportions from each approximated the desired ratios. The cooperating faculty, the institutions, and the proportions of each sample for the six, separate TUCE used are identified in Appendix I of this paper.

In the fall of 1981 the appropriate forms of the revised TUCE were distributed to the participating faculty for the first sample of students as they entered their first college course in economics. There were, unavoidably, some who had already had an introductory course in either macro- or microeconomics since the majority of colleges and universities in the state require both. Acquaintance with the vocabulary and unique approach of the discipline might very well have predisposed some to a better performance as a result. But it is hard to tell. The results are presented in Table 8.

As an inducement for participating, it was promised not to divulge the results of any individual, class, section or institution. That proscription still applied, though the individual faculty members were informed of the results for their classes with an individual listing in the format for which the statewide results are presented here. Progress further ensures that individual results will remain private since the UNO Testing Services operation installed new scanning equipment in the spring of 1982 and the program for interpreting and printing results from the older, red, OPSCAN answer sheets was erased.

The Results

The principal results of the project are presented in Table 8 which allows easy comparison with the finding of the nationwide sample in the spring of 1979.

Though the individual questions themselves differ between form A and form B of each of the three, major content-area tests, the content and objectives of each of the two forms are as nearly identical as is possible so as to allow comparison of student responses before their first college course and at it's conclusion. The Joint Council was able to

draw upon a large nationwide sample that allowed using all the forms of the revised TUCE in classes both before the course and after, usually identified as Pre-Test and Post-Test. The Louisiana study was not allowed such a luxury. Thus in each of the three, major content-area tests administered, we used form A for the pre-test and form B for the post-test. The principal reason for such a strategy, of course, was to preclude or diminish the students' ability to memorize questions and thus distort the end-of-course results. Such fears were exaggerated, according to Dr. Welsh of the Joint Council, but it was the strategy used and the results are plainly evident.

The arithmetic means are the measures conventionally presented and allowing the quickest comparison and conclusion concerning the economic understanding of Louisiana's college students. It is not unexpected, certainly not to Louisianians in the fields of education, that either the pre- or post-test means are below the national averages. On each of the pre-test comparisons, the differences between the means of the state and the national study present about the same differences in student performance, and reflecting their preparation for college study, as do the other widely used measures of scholastic ability and accomplishment. With the widely used ACT scores, for example, the nation's mean for the composite score was 18.7 for enrolled freshmen in the fall of 1981.[3] For social studies, the mean was 17.6. The results for Louisiana enrolled freshmen that same year were 16.3 on the composite and 14.8 for the social studies test. The ACT uses a 36-question test and scoring system. The TUCE scores are the product of a 30 question quizzing. Within the state, the range of ACT social studies test means at the public universities and colleges ranged from 18.3 to 7.2 that year. The scores for the private colleges were higher, up to about 22 in fact. For the composite scores, state public universities and colleges ranged from 19.6 to 8.6, with the private schools again correspondingly higher. Similar ranges were reflected in the results from the pre-course TUCE, affirming the general appraisal of Louisiana-students' preparation for college study.

But, as you know, there are means and there are means. Placing the Louisiana means equal to the percentile of the same score in the national

sample can yield some startling statistics. While interesting for 60-Minutes or 20/20, percentile-equivalency data are rather more misleading than informative. Instead, one should look at the standard deviation and the standard error of measurement for better perspective. Consequently, the Louisiana scores were standardized by conversion to T-Scores, where $T = 100z + 500$. (z is the sample mean minus the raw score divided by the standard deviation).

Table A

RESULTS in T-SCORES

Test	U.S. $\bar{X}$	Std. Dev.	La. $\bar{X}$	La. $\bar{X}$ as T-Score
Macro-A	10.98	3.67	9.88	470
Micro-A	12.51	3.83	10.83	456
Mac/Mic-A	10.44	3.32	10.22	493
Macro-B	15.35	5.03	11.61	426
Micro-B	16.50	4.78	11.32	392
Mac/Mic-B	15.00	4.81	12.75	453

Table A presents the T-Scores for the Louisiana study's means. Convention has established that the pass-fail criterion rests in the 350-400 range, that is, one- to one-and-a-half standard deviation units below the sample mean. So, one may happily conclude that, though low, Louisiana students are not 'failing' economics. However, and alas, neither are they truly 'passing' either. No test mean's T-Score reaches 500.

Are the means of the Louisiana sample significantly different from those of the nationwide sample? In a word: yes. Comparing the means for all six TUCE forms, one finds that the value of z in a test of significance for the difference between two means ranges from 4.940 to 18.546. The standard statistics text table for such values stops at 3.00.. The Mac/Mic-A test, however, which utilized the smallest sample, was the one exception. For that one, $z = 0.8384$ so the results could be due to chance. The others, however, were significantly significant.

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Explanations

There are two possible explanations that offer some mitigation of the results of this inquiry into the economic understanding of Louisiana college students. They are: a) the motivation of the test-taking students, and b) the content of the TUCE as compared to the content of either the students' preparatory course or experience and the content of the students' college course.

Several cooperating instructors wrote or called to note that since they did not include the test as part of the course grade, some students treated it in a cavalier manner with correspondingly meaningless results. Or certainly less meaningful than they might otherwise have been. Such a problem surfaces and complicates virtually every type of testing of the sort attempted here. No doubt even Pepsico in it's "Challenge" survey had to contend with it. Certainly, Coca-Cola should have. But without a doubt such poor or missing motivation explains the rather longer right-hand tail of the distribution of student scores about the mean than the universal, normal distribution would lead one to expect. Good students will tackle all tests with customary diligence. Poorer students, as conventionally measured, may not bother to even attempt the test so that an honest indication of their knowledge is simply unobtainable. So be it! While true for an unknown portion of the sample, it nevertheless does measure for us academicians two other things: students' nonconformity if not outright rejection of traditional and/or prevailing academic values and procedures; and a prevailing, almost defiant, cavalier attitude toward economic issues of more than the most personal sort. On that score, of course and regretably so, students are nevertheless affirming the basic premise of self-interest underlying microeconomics.

On the other hand, some instructors objected, and some strongly so, that the test did not test "their" course. Turning to the heading of Tables 1 through 6, one can identify the content area, the test-question objectives, and a fair idea of the weights the test-design committee assigned to separate topic areas. The body of those tables presents data which represents, or allows, an assessment of the tests' content validity for the sample. To illustrate, using Table 1, Macro Form A, consider question number 3. It shows that only 22 percent of the Louisiana sample

selected the correct choice. Forty-two percent selected the "D" statement. Measuring the question's correlation with the total test score, one finds a correlation, or measure of co-variance, of only 0.09, the R_t statistic in the table. For the national sample for that question, the R_t value was 0.01. Ordinarily such statistics would indicate a revision in the wording of the question was needed, or, even, that the question should be eliminated from the test. However, make your own decision about the question, which is presented below.

Macro-4, TUCE, Question 3

Individuals will generally want to hold larger money balances if:

a. interest rate and income both fall.
b. interest rates and income both rise.
c. interest rates fall and income rises.
d. interest rates rise and income falls.[4]

The question was deemed by the authors of TUCE to be a quizzing on monetary matters for controlling aggregate demand, or monetary policy, and that the question was an explicit application of required knowledge on such matters. It is, first of all, neither Keynesian or Monetarist, but common to both those approaches as well as most others. And 42 percent of the Louisiana sample chose 'd'. Decide for yourself whether the results reflect either true economic mis-understanding or just simple confusion in defining money balances. Either way, the question has appraised people's understanding of economics.

Table 7 presents data on the difficulty of questions for the three, post-course tests for both Louisiana and the national sample. For the Macro-3 test item, for example, 28 percent of Louisiana students only selected correctly for what was, by definition, for them the most difficult Recognition and Understanding type of question. For the U.S., the percentage was 24. For all ten Recognition and Understanding type questions, 45.9 percent of the Louisianians answered correctly; for the U.S. the percentage was 39.0. In general, then, an examination of the

content and objective of each of the test questions shows that the means fairly reflected the performance of the sample.

But what if the tests' content does not reflect the content of either secondary-school preparatory courses or the college course in economics? Several answers to that problem come to mind, at last. One is: why not? A debate on indoctrination versus learning how to use a discipline may very well ensue here. It's examination and rebuttal is properly the subject of another paper. However, since Louisiana is one of 26 states now mandating a course in economics, private enterprise or, as in Louisiana, the "essentials and benefits of the free-enterprise system," the matter is a subject warranting further investigation. And, accordingly, the Louisiana Council on Economic Education has begun a study of the high-school, mandated course in free-enterprise using another of the Joint Council's nationally-normed tests of economic understanding. The results of that survey will allow an appraisal of the content of the state's free-enterprise course as it is actually taught and objectively measured. This survey, using the TUCE, however, does allow an appraisal of the actual content retained and carried on to college by the state's, and the nation's, "better" students. It is sobering. Consensus among economists is a matter of nationwide humor, and no matter how incorrect. But if a panel of economists of the general caliber exhibited by the test-revision committee selected by both the American Economic Association and the Joint Council do not know as well, or even a little better, the appropriateness of the content and direction of knowledge for the incoming college freshman or sophomore, then who, indeed, does?

Conclusions

To the extent, this study has fairly examined Louisiana college students on their economic understanding. Before a college-level course in economics, the student's are no better prepared, and not much worse, than most of their peers in the nation. After one, or two, courses in college economics, however, this study's results indicate that Louisiana's college students may be fairly judged to be ill-prepared indeed to cope with the required decisions of citizens in a participatory, fragile, market-oriented democracy.

NOTES

[1]Kenneth E. Boulding, "Economic Education: The Stepchild Too Is Father Of The Man," Journal of Economic Education, Volume 1, Number 1 (New York: Joint Council on Economic Education, 1969), pp. 7-11.

[2]Phillip Saunders, Revised Test of Understanding in College Economics: Interpretive Manual (New York: Joint Council on Economic Education, 1981., 64 p.

[3]James Cass and Max Birnbaum, Comparative Guide to American Colleges, Ninth Edition (New York: Harper and Row, 1979). Louisiana colleges and universities arranged alphabetically on various pages from 85 to 352. 1978 data on national and state ACT scores supplied from data emanating from the American College Testing Program, compiled by the Counseling Division of the University of New Orleans.

[4]Saunders, op. cit., p. 30.

APPENDIX A

Sample of Students
from
Louisiana Colleges and Universities for
TUCE Project

147,412 Enrolled in 1979

Institutions	Proportion	Pre-Test	Post-Test
LSU System	32%	30%	26%
Southern U.	8	10	13
BESE	46	44	37
Private	14	16	23

Sources: Cass and Birnbaum, Comparative Guide to American Colleges, 9th Edition (New York: Harper & Row, 1979), and data supplied by the supervisory staff of the institutions.

Institutions and Individuals Cooperating with TUCE Project

Centenary College, Shreveport	Dr. Harold L. Christensen Department of Economics and Center for Economic Education
Louisiana College, Pineville	Bruce R. Cofer Department of Economics
Loyola University, New Orleans	Dr. William Barnett Department of Economics
Our Lady of Holy Cross New Orleans	Noel L. Wright Division of Business and Economics
St. Mary's Dominican College New Orleans	William Carey Department of Business and Social Sciences
Southern University Baton Rouge	Frederick C. Temple Department of Economics
Southern University New Orleans	Dr. Norman C. Wilson Department of Economics
Southern University Shreveport	Charles T. Treadway Department of Business
Louisiana Tech University Ruston	Dr. Earl B. Williamson Department of Economics and Center for Economic Education
McNeese State University Lake Charles	James E. Tinsley School of Business and Center for Economic Education
Northeast Louisiana University Monroe	Dr. Rodney Mabry Department of Economics and Finance
Northwestern State University Natchitoches	Dr. Eugene Williams Department of Economics
Southeastern Louisiana University Hammond	Dr. Joseph Miller Department of Economics

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University of Southwestern Louisiana, Lafayette	Dr. E. E. Carradine Department of Economics and Center for Economic Education
Louisiana State University, Baton Rouge	Dr. Robert F. Smith Department of Economics and Center for Economic Education
University of New Orleans	Dr. C. P. Fishbaugh Department of Economics and Center for Economic Education

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The director of the TUCE Project would like to acknowlege the help and cooperation of the faculty members noted above whose participation, cooperation, help and constructive comments enabled the research project to collect significant data about the economic understanding of Louisiana college students.

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TABLES 1–6. SPECIFICATION MATRIXES AND PRE- AND POST-TEST ITEM DATA FOR THE REVISED TUCE

(The entries in the cells are the question numbers of the TUCE. In both parts of each table, an X follows the question number of "realistic" questions. In the bottom part, R_t = correlation of a correct response with total TUCE score.)

TABLE 1. Macro Form A

Content Categories	Cognitive Categories: Recognition & Understanding	Explicit Application	Implicit Application	No. of Questions
A. Measuring Aggregate Economic Performance	1	7, 15	21X	4
B. Aggregate Supply, Productive Capacity, and Economic Growth	5, 28	8X, 26	11X	5
C. Income and Expenditure Approach to Aggregate Demand and Fiscal Policy	13, 22, 23, 27	9	2X, 19	7
D. Monetary Approach to Aggregate Demand and Monetary Policy	12, 17, 24X	3, 6, 14	20X	7
E. Policy Combinations and Practical Problems of Stabilization Policy		10, 25	4X, 16X, 18X, 29X, 30X	7
No. of Questions	10	10	10	30

Question Number	Pre-Test (N = 528) Percent Distribution of Responses* A	B	C	D	R_t
1	48	18	18*	16	.28
2x	9	13	20	58*	.29
3	5	30	22*	42	.09
4x	29*	13	29	29	.37
5	15	12	6	67*	.32
6	22	23	25	29*	.36
7	17	50*	17	16	.19
8x	8	23	28	40*	.40
9	14*	28	36	22	.16
10	23	23	31*	24	-.01
11x	18	18*	34	29	.23
12	10	29	17	44*	.23
13	42*	7	19	32	.40
14	31	26	33*	10	.27
15	12	25*	21	42	.39
16x	14	17	31	37*	.47
17	31*	9	13	47	.35
18x	24	22*	21	33	.24
19	28	18	27	27*	.32
20x	21*	16	43	20	.18
21x	16	25	27*	32	.33
22	28	22	24	26*	.23
23	19	33	30*	18	.18
24x	17	30*	30	23	.27
25	15	29*	26	31	.16
26	18	50*	10	22	.31
27	21	14	30*	36	.02
28	56*	9	19	15	.33
29x	14	24*	42	20	.19
30x	36	21	20	23	.09

*Denotes correct option. Percentages may not add to 100 because of rounding.

TABLE 2. Macro Form B

Content Categories	Cognitive Categories: Recognition & Understanding	Explicit Application	Implicit Application	No. of Questions
A. Measuring Aggregate Economic Performance	1, 8	7, 23		4
B. Aggregate Supply, Productive Capacity, and Economic Growth	5, 18, 24	6	29	5
C. Income and Expenditure Approach to Aggregate Demand and Fiscal Policy	2X, 19, 22, 26X		9X, 13X, 27X	7
D. Monetary Approach to Aggregate Demand and Monetary Policy	10	4, 14X, 20, 28	11X, 21	7
E. Policy Combinations and Practical Problems of Stabilization Policy		3X, 17, 30X	12X, 15, 16X, 25	7
No. of Questions	10	10	10	30

Question Number	Post-Test (N = 356) Percent Distribution of Responses* A	B	C	D	R_t
1	67*	5	8	19	.38
2x	63*	7	11	19	.33
3x	8	26	30	36*	.24
4	24	21	5	50*	.38
5	22	7	52*	19	.38
6	5	28	32*	35	.24
7	12	13*	41	34	.08
8	46*	12	24	19	.14
9x	29	37*	23	10	.44
10	3	18*	71	8	.16
11x	42*	11	41	6	.24
12x	28	33	28*	11	.26
13x	9	5	24	62*	.31
14x	6	19	44	31*	.37
15	10	17	45	26*	.38
16x	23	21	46*	10	.33
17	38*	10	12	40	.17
18	6	52*	9	33	.31
19	33*	16	35	16	.16
20	17	46*	16	21	.28
21	22	46*	19	13	-.02
22	30	49*	11	10	.41
23	28*	14	31	27	.41
24	17	11	37	35*	.47
25	20	23	28	28*	.40
26x	13	12	47*	28	.38
27x	24	43	22*	12	.07
28	20	13	39	28*	.28
29	25	33*	23	19	.25
30x	16	40	33*	12	.07

*Denotes correct option. Percentages may not add to 100 because of rounding.

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TABLE 3. Micro Form A

Content Categories	Cognitive Categories			No. of Questions
	Recognition & Understanding	Explicit Application	Implicit Application	
A. The Basic Economic Problem	1	5	13, 15x	4
B. Markets and the Price Mechanism	7, 9, 14	6x, 28x	2, 27	7
C. Costs, Revenue, Profit Maximization, and Market Structure	4, 11, 18	22x, 25x	26x, 29x	7
D. Market Failure, Externalities, Government Intervention and Regulation	8, 24	15x, 21	17x, 30	6
E. Income Distribution and Government Redistribution	10	19x, 23x, 30	3, 12x	6
No. of Questions	10	10	10	30

Table 4. Micro Form B

Content Categories	Cognitive Categories			No. of Questions
	Recognition & Understanding	Explicit Application	Implicit Application	
A. The Basic Economic Problem	1, 23	2	30x	4
B. Markets and the Price Mechanism	7x, 14x	17, 21x, 26	16, 20	7
C. Costs, Revenue, Profit Maximization, and Market Structure	9, 18, 24	6x, 25	8x, 11x	7
D. Market Failure, Externalities, Government Intervention and Regulation	27, 29	3, 22x	4x, 15x	6
E. Income Distribution and Government Redistribution	10	5, 28x	12, 13x, 19	6
No. of Questions	10	10	10	30

Question Number	Pre-Test (N = 515) Percent Distribution of Responses*				
	A	B	C	D	R_{pb}
1	16*	30	7	47	.26
2	11	46*	3	39	.34
3	44	10	33*	13	.22
4	9	6	58	27*	.24
5	22*	1	1	76	.34
6	26	16	33*	25	.15
7	12	28	33	27*	.34
8	21	27	44*	8	.11
9	18	27*	23	32	.31
10	23*	27	31	18	.38
11	25*	18	40	17	.23
12	11	28*	42	19	.21
13	34	9	6	50*	.16
14	9	42*	35	14	.31
15	26	22*	18	33	.10
16	14	26*	20	40	.33
17	23*	22	39	15	.17
18	44	8	29*	19	.09
19	11	23	40*	26	.26
20	7	6	16	71*	.36
21	11	19	17	52*	.22
22	12	61*	17	10	.40
23	23	9	13	55*	.27
24	10	34*	21	35	.04
25	30*	23	32	15	.28
26	4	17*	20	60	.14
27	8	4	74*	13	.32
28	10	21	43*	25	.29
29	18	34	18	30*	.24
30	45*	31	16	7	.39

*Denotes correct option. Percentages may not add to 100 because of rounding.

Question Number	Post-Test (N = 376) Percent Distribution of Responses*				
	A	b	C	D	R_{pb}
1	5	13	67*	15	.29
2	16	17	39*	28	.38
3	53	6	11	29*	.35
4x	5	18	24	54*	.23
5	12	38*	32	19	.21
6x	34*	42	14	10	.37
7x	7	51*	27	15	.36
8x	12	15	31	42*	.33
9	37	14	21	28*	.08
10	28*	25	34	13	.53
11x	17	13*	29	39	.21
12	9	14	62*	15	.34
13x	17	34*	25	24	.39
14x	8	19	58*	16	.36
15x	40	13	40*	8	.18
16	19*	12	10	58	.30
17	11	16	47*	26	.42
18	62*	15	12	11	.35
19	28*	17	37	18	.26
20	10	47*	16	27	.45
21x	32*	43	18	7	.52
22x	13	39	20	29*	.41
23	10	17	26	46*	.64
24	13	15	35*	37	.26
25	16	20	29*	35	.24
26	24*	35	32	9	.40
27	8	54	17	21*	.15
28x	24	15	26	34*	.43
29	9	55*	27	9	.47
30x	11	44*	29	16	.47

*Denotes correct option. Percentages may not add to 100 because of rounding.

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TABLE 5. Macro/Micro Form A

Content Categories	Cognitive Categories: Recognition & Understanding	Explicit Application	Implicit Application	No. of Questions
Micro Categories				
A The Basic Economic Problem	1	15X	18X	3
B Markets and the Price Mechanism	29†	26†, 30X		3
C Costs, Revenues, Profit Maximization, and Market Structure	9		16X	3
D Market Failure, Externalities, Government Intervention & Regulation	17	8X	2X	3
E Income Distribution & Government Redistribution		6, 20	24X	3
Macro Categories				
A Measuring Aggregate Economic Performance	3	11	4X	3
B Aggregate Supply, Productive Capacity, and Economic Growth	10, 28	5X	12	4
C Income and Expenditure Approach to Aggregate Demand and Fiscal Policy	14, 25	13		3
D Monetary Approach to Aggregate Demand and Monetary Policy	23	7	27X	3
E Policy Combinations and Practical Problems of Stabilization Policy			19X, 21X, 22	3
No. of Questions	10	10	10	30

TABLE 6. Macro/Micro Form B

Content Categories	Cognitive Categories: Recognition & Understanding	Explicit Application	Implicit Application	No. of Questions
Micro Categories				
A The Basic Economic Problem	1, 17		19X	3
B Markets and the Price Mechanism		12, 15†	2	3
C Costs, Revenues, Profit Maximization, & Market Structure		27	9†	3
D Market Failure, Externalities, Government Intervention and Regulation	25	8	20X	3
E Income Distribution and Government Redistribution		29X	3, 22X	3
Macro Categories				
A Measuring Aggregate Economic Performance	18	4, 9		3
B Aggregate Supply, Productive Capacity, and Economic Growth	5, 26	10	11X	4
C Income and Expenditure Approach to Aggregate Demand and Fiscal Policy	21, 24		18	3
D Monetary Approach to Aggregate Demand and Monetary Policy	6X, 13	23X		3
E Policy Combinations and Practical Problems of Stabilization Policy		7	28X, 30X	3
No. of Questions	10	10	10	30

Pre-Test (N = 201)

Question Number	Percent Distribution of Responses* A	B	C	D	R_t
1	16*	30	7	46	.41
2x	15*	24	54	7	.00
3	40	20	28*	12	.17
4x	11	24	39*	26	.30
5x	3	21	40	37*	.14
6x	48*	40	8	3	.29
7	26	22	17	34*	.29
8x	19	39*	16	25	.18
9	9	9	28*	55	.01
10	10	14	6	70*	.27
11	14	45*	20	20	.23
12	16	7	47	31*	.12
13	15*	29	33	22	.18
14	38	42*	13	6	.45
15x	12*	20	40	29	.19
16x	6	13*	22	58	.09
17	22	32	39*	7	.18
18x	15	17	13	55*	.38
19x	23*	13	32	33	.28
20	10	38*	29	22	.18
21x	16	16	29	38*	.29
22	12	21	49	18*	.14
23	12	20	19	49*	.33
24x	8	36*	35	21	.29
25	22	11	33*	34	.14
26x	27	19	33*	20	.19
27x	15	36*	23	26	.30
28	56*	7	25	12	.13
29x	16	26*	41	18	.18
30x	8	21	41*	29	.31

Post-Test (N = 122)

Question Number	Percent Distribution of Responses* A	B	C	D	R_t
1	8	21	44*	26	.30
2	59*	31	7	2	.38
3	31	13	48*	8	.29
4	10	34*	23	32	.52
5	18	9	25	48*	.19
6*	7	52*	15	25	.35
7	35*	24	16	25	.49
8	41	5	8	46*	.21
9	11	14*	31	43	.08
10	6	22	44*	29	.34
11x	16	46*	22	16	.41
12	29*	29	30	13	.34
13	58*	6	8	28	.18
14x	19	11	30	37*	.27
15x	20	30*	25	25	.35
16	53*	11	20	16	.45
17	11	13	20	57*	.44
18x	2	11	11	75*	.41
19x	15	45*	15	25	.37
20x	43	10	37*	8	.33
21	38*	14	31	17	.31
22x	28	14	12	45*	.16
23x	11	16	38	33*	.38
24	21	25	40*	14	.31
25	7	56	17	20*	.11
26	22	9	58*	9	.48
27	15	16	35*	34	-.01
28x	21	45*	23	11	.34
29x	23	15	41*	21	.30
30x	45*	19	20	15	.51

BLE 7. Post-Test Difficulty of Questions on the Revised TUCE, by Cognitive Classification

orm of Test and pe of Questions	Percent of Louisiana Students Selecting Correct Response			Percent of Nationwide Norm Group Selecting Correct Response[1]		
	Hardest Question	Easiest Question	Mean 10 Questions	Hardest Question	Easiest Question	Mean 10 Questions
cro B						
10 RU	18	67	45.9	24	75	59.0
10 EA	13	50	33.8	16	64	43.3
10 1A	22	62	36.4	28	84	51.1
cro B						
10 RU	21	67	43.7	29	78	61.7
10 EA	24	47	32.3	34	66	52.9
10 1A	13	62	37.3	22	81	50.4
brid B						
10 RU	20	58	46.6	24	74	50.5
10 EA	14	52	33.2	10	66	45.3
10 1A	37	75	46.7	35	86	53.9

[1]Source: Phillip Saunders, Revised Test of Understanding in College Economics, Interpretive nual, (NY: JCEE, 1981), p. 20.

TABLE 8. Pre- and Post-Test Comparisons of Student Performance on Each Form of the Revised TUCE[a]

	Pretest						Post-Test					
			Raw Score						Raw Score			
Form	N	Mean % Correct	Mean	Std. Dev.	K-R 20	SE_M	N	Mean % Correct	Mean	Std. Dev.	K-R 20	SE_M
Macro-A												
La.	528	32.9	9.88	3.47	.50	2.45						
U.S.[1]	927	36.6	10.98	3.67	.54	2.49	1,163	57.8	17.35	5.62	.81	2.44
Macro-B												
La.							356	38.7	11.61	3.95	.59	2.52
U.S.[1]	787	35.9	10.76	3.28	.43	2.48	1,108	51.2	15.35	5.03	.76	2.46
Micro-A												
La.	515	36.1	10.83	3.45	.49	2.47						
U.S.[1]	1,190	41.7	12.51	3.83	.57	2.52	1,447	55.5	16.66	4.94	.74	2.51
Micro-B												
La.							376	37.7	11.32	4.80	.74	2.45
U.S.[1]	984	40.4	12.12	3.75	.56	2.47	1,364	55.0	16.50	4.78	.75	2.46
Mac/Mic-A												
La.	201	34.1	10.22	3.10	.36	2.47						
U.S.[1]	686	34.8	10.44	3.32	.45	2.46	1,084	53.7	16.12	4.81	.73	2.48
Mac/Mic-B												
La.							122	42.5	12.75	4.58	.69	2.54
U.S.[1]	859	35.5	10.66	3.52	.51	2.46	652	50.0	15.00	4.81	.73	2.48

[1] Ibid., Table 10, p. 21.